IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Michael Ben Sellers
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Group Art Unit:	3768
Examiner:	Ellsworth Weatherby
Confirmation No.	1906
For:	GRADIENT COIL APPARATUS AND METHOD OF ASSEMBLY THEREOF

APPEAL BRIEF

Applicant submits this Appeal Brief in support of the Notice of Appeal dated June 3, 2009 that was filed in response to the Final Office Action dated April 15, 2009.

I. THE REAL PARTY IN INTEREST

The real party in interest in this appeal is General Electric Company. Ownership by General Electric Company is established by an assignment document recorded for this application on January 8, 2009 on Reel 022074 and Frame 0226.

II. RELATED APPEALS AND INTERFERENCES

Applicant knows of no related patent applications or patents under any appeal or interference proceeding.

III. STATUS OF CLAIMS

Claims 1-3, 5-7, 12-18 and 21-24 are pending and are the claims subject to this appeal. Claims 1-3, 5-7, 12-18 and 21-24 are shown herein in the Section VIII Claims Appendix. Claims 4, 8-11, 19, 20 have been cancelled.

Claims 1-3, 12-15, 17 and 21, 22 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 7,190,170.

Claims 1, 2, 6, 7, 12-15, 17, 18, 21, 22 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dietz et al. (U.S. Patent No. 6,642,717) in view of Wang et al. (U.S. Patent Publication No. 2004/0225213).

Claim 3 is rejected under 35 U.S.C. §103(a) as being unpatentable over Dietz et al. (U.S. Patent No. 6,642,717) in view of Wang et al. (U.S. Patent Publication No. 2004/0225213) as applied to claim 1, and further in view of Doty (U.S. Patent No. 5,530,355).

Claims 5 and 23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dietz et al. (U.S. Patent No. 6,642,717) in view of Wang et al. (U.S. Patent Publication No. 2004/0225213) as applied to claims 2 and 22, and further in view of Lehne et al. (U.S. Patent No. 5,235,283).

IV. STATUS OF AMENDMENTS

Applicant concurrently filed a terminal disclaimer on July 31, 2009 with this Appeal Brief to obviate the nonstatutory obviousness-type double patenting rejection of claims 1-3, 12-15 and 21-22.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a gradient coil assembly for use in an MRI device. The assembly includes a gradient tube extending along an axis. See Fig. 2 having inner gradient coil assembly 24 with an inner gradient tube 24 extending along an axis; and paragraph 0015, lines 1-3. The tube includes first and second gradient coils and a conductive compound disposed between the first and second gradient coils. See Fig. 2 having inner gradient tube 24 with the inner Y coil 28 and the inner X coil 30 and a conductive compound 32 disposed in a gap (G2) between the inner Y coil 28 and the inner X coil 30; and paragraph 0015, lines 1-3; and paragraph 0019, lines 5-8. The conductive compound includes a glue, and a chemical hardening compound disposed in the glue, and a plurality of conductive particles disposed substantially uniformly within the glue. See paragraph 0020, lines 6-9, 11-14, and 16-18. At least a portion of the plurality of conductive particles are in a range of 1-10μm in diameter. See paragraph 0020, lines 14-16. A volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound. See paragraph 0020, lines 18-21. Further, the plurality of conductive particles cause a current flowing through the conductive compound to be limited to less than 10 microamps to reduce electrostatic discharges in the glue. See paragraph 0020, lines 21-23; and paragraph 0004, lines 1-7.

Claim 3 depends from claim 1 and further recites that the conductive particles are carbon particles. See paragraph 0020, lines 11-13.

Claim 5 depends from claim 2 which further depends from claim 1, and further recites that an epoxy resin is a bisphenol-A resin. See paragraph 0020, lines 6-9.

Independent claim 12 is directed to a gradient coil assembly for use in an MRI device. See Fig. 2 having inner gradient coil assembly 24; and paragraph 0015, lines 1-3. The gradient tube extends along an axis. See Fig. 2 having inner gradient tube 24 extending along an axis; and paragraph 0015, lines 1-3. The tube includes first and second

gradient coils and a potting compound layer disposed between the first and second gradient coils. See Fig. 2 having inner gradient tube 24 with the inner Y coil 28 and the inner X coil 30 and a conductive compound 32 disposed in a gap (G2) between the inner Y coil 28 and the inner X coil 30; and paragraph 0015, lines 1-3; and paragraph 0019, lines 5-8; and paragraph 0020, lines 4-6. The potting compound layer has a plurality of conductive particles configured to limit a current flowing through the potting compound layer to less than a predetermined current value to reduce electrostatic discharges in the potting compound layer. See paragraph 0020, lines 4-9 and 21-23. Further, the plurality of conductive particles are at least one of silver particles and gold particles. See paragraph 0020, lines 11-14.

Independent claim 13 is directed to a method for assembling a gradient coil assembly. See Fig. 2 having inner gradient coil assembly 24; and paragraph 0015, lines 1-3. The method includes disposing a first gradient coil on a first gradient tube. See Fig. 2 having inner gradient tube 24 with inner Z coil 27; and Fig. 3A, step 74; and paragraph 0030, lines 1-3. The method further includes disposing a conductive compound between the first gradient coil and a second gradient coil. See Fig. 2 having conductive compound 32 disposed in a gap (G2) between the inner Y coil 28 and the inner X coil 30; and paragraph 0015, lines 1-3; and paragraph 0019, lines 5-8. The conductive compound is a glue having a plurality of conductive particles therein. See paragraph 0020, lines 6-9 and 11-14. At least a portion of the plurality of conductive particles being in a range of 1-10μm in diameter. See paragraph 0020, lines 14-16. A volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound. See paragraph 0020, lines 18-21. Further, the plurality of conductive particles cause a current flowing through the conductive compound to be limited to less than 10 microamps to reduce electrostatic discharges in the glue. See paragraph 0020, lines 21-23; and paragraph 0004, lines 1-7.

Independent claim 21 is directed to a gradient coil assembly for use in an MRI device. See Fig. 2 having inner gradient coil assembly 24; and paragraph 0015, lines 1-3.

The gradient coil assembly includes a gradient tube extending along an axis. See Fig. 2 having inner gradient coil assembly 24 with an inner gradient tube 24 extending along an axis; and paragraph 0015, lines 1-3. The tube includes first and second gradient coils and a conductive compound disposed between the first and second gradient coils. See Fig. 2 having inner gradient tube 24 with the inner Y coil 28 and the inner X coil 30 and a conductive compound 32 disposed in a gap (G2) between the inner Y coil 28 and the inner X coil 30; and paragraph 0015, lines 1-3; and paragraph 0019, lines 5-8. The conductive compound is a glue having a plurality of conductive particles dispersed substantially uniformly within the glue. See paragraph 0020, lines 6-9 and lines 11-14 and 16-18. At least a portion of the plurality of conductive particles is in a range of 1-10μm in diameter. See paragraph 0020, lines 14-16. A volume percentage of the plurality of conductive particles is within a predetermined volume percentage range of the conductive compound. See paragraph 0020, lines 18-21. Further, the plurality of conductive particles cause a current flowing through the conductive compound to be limited to less than 10 microamps to reduce electrostatic discharges in the glue. See paragraph 0020, lines 21-23; and paragraph 0004, lines 1-7.

Claim 23 depends from claim 22 which further depends from claim 21, and further recites that the conductive particles are carbon particles. See paragraph 0020, lines 11-13.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1, 2, 6, 7, 12-15, 17, 18, 21, 22 and 24 are unpatentable under 35 U.S.C. §103(a) over Dietz et al. (U.S. Patent No. 6,642,717) in view of Wang et al. (U.S. Patent Publication No. 2004/0225213).

Whether claim 3 is unpatentable under 35 U.S.C. §103(a) over Dietz et al. (U.S. Patent No. 6,642,717) in view of Wang et al. (U.S. Patent Publication No. 2004/0225213) as applied to claim 1, and further in view of Doty (U.S. Patent No. 5,530,355).

Whether claims 5 and 23 are unpatentable under 35 U.S.C. §103(a) over Dietz et al. (U.S. Patent No. 6,642,717) in view of Wang et al. (U.S. Patent Publication No. 2004/0225213) as applied to claims 2 and 22, and further in view of Lehne et al. (U.S. Patent No. 5,235,283).

VII. ARGUMENT

Applicant concurrently filed a terminal disclaimer on July 31, 2009 with this Appeal Brief to obviate the nonstatutory obviousness-type double patenting rejection of claims 1-3, 12-15 and 21-22, over claims 1-18 of U.S. Patent No. 7,190,170. Accordingly, because applicant believes that the foregoing rejection has been obviated with the terminal disclaimer, no arguments regarding this rejection will be provided herein.

A. THE EXAMINER'S REJECTION OF CLAIMS 1, 2, 6, 7, 12-15, 17, 18, 21, 22, and 24 UNDER 35 U.S.C. §103(a) IS IMPROPER

The Examiner's rejection of claims 1, 2, 6, 7, 12-15, 17, 18, 21, 22, and 24 under 35 U.S.C. 103(a) is improper because the Examiner has not identified any proper motivation for the proposed combination of references and the combination of references does not teach or suggest each and every limitation of the claims.

Applicant notes that claims 1, 2, 6, 7, 13-15, 17 and 18 stand or fall together as a group. Claim 12 stands or falls by itself. Claims 21, 22 and 24 stand or fall together as a group. However, the arguments in the following section apply to claims 1, 2, 6, 7, 12-15, 17, 18, 21, 22, and 24.

1. The Examiner's rejection of claims 1, 2, 6, 7, 12-15, 17, 18, 21, 22, and 24 is improper under 35 U.S.C. §103(a) because the Examiner has not identified any proper motivation for the proposed combination of Dietz et al. and Wang et al.

In order for an obviousness rejection to be proper, the Examiner must meet the burden that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996). See MPEP 2143.

Referring to Dietz et al., the reference is directed to a magnetic resonance apparatus. The magnetic resonance apparatus has a gradient coil system including at least one flexible and thermally conductive damping structure. The thermally conductive damping has thermally conductive particulate fillers to cool the gradient coil system. See Dietz et al., abstract; and column 2, lines 16-20.

Referring to Wang et al., the reference is directed to an implanted medical device that can be located within a biological organism. Further, Wang et al. identifies U.S. Patent No. 4,989,608 that describes an implantable device that has ferromagnetic particles resulting in the implantable device being distinguishable from tissue. See Wang et al., paragraph 0010.

Applicant notes that neither reference recognizes the problem being solved by the claimed invention. In particular, neither reference recognizes that high-voltage potentials induced in a resin between first and second gradient coils can undesirably cause electrostatic discharges in air bubbles within the resin resulting in undesirable bursts of electromagnetic radiation. The undesirable bursts of electromagnetic radiation causes a "snowy" image in an MRI machine. Accordingly, applicant submits that no proper motivation has been identified for combining Dietz et al. and Wang et al. in an attempt to solve a problem that neither reference recognizes.

Applicant further notes that Wang et al. is not even directed toward a magnetic resonance imaging machine. In contrast, Wang et al. is directed to an implantable device. Accordingly, applicant submits that one skilled in the art would not look to Wang et al. in an attempt to modify the teachings of Dietz et al.

Because no proper motivation has been identified for the proposed combination of Dietz et al. and Wang et al., applicant submits that the rejection of claims 1, 2, 6, 7, 12-15, 17, 18, 21, 22, and 24 based on the proposed combination under 35 U.S.C. §103(a) is improper.

2. The Examiner's rejection of claims 1, 2, 6, 7, 13-15, 17 and 18 is improper under 35 U.S.C. §103(a) because Dietz et al. and Wang et al., alone or in combination, do not teach or suggest each and every limitation of the claims.

In order for an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996). See MPEP 2143.

Independent claim 1 recites in part: "a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue."

After reviewing Dietz et al., applicant submits that Dietz et al. does not teach or suggest: "a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue", as recited in claim 1.

Applicant further notes that the Examiner's statement that the limit "less than 10 microamps is not given any patentable weight over Dietz et al. '717 because both Dietz et al. '717 and the present application are concerned with limiting current", is clearly improper. See Final Office Action, page 4, lines 8-10. In particular, applicant submits that claim 1 includes specific limitations that cannot be ignored by the Examiner in determining the patentability of the claim. Applicant further notes that the Examiner has clearly misconstrued Dietz et al., since *Dietz et al. is not concerned with limiting current as suggested by the Examiner.* In contrast, Dietz et al. utilizes a *thermally conductive damping structure* with thermally conductive particles to cool a gradient coil system. See Dietz et al., column 2, lines 15-21.

Further, Wang et al. does not teach or suggest: "*a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound* such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue", as recited in claim 1. In contrast, Wang et al. merely discusses a "flexible member having ferromagnetic particles embedded therein a concentration of about 0.001% to about 10% by *weight* of the material..." See Wang et al., paragraph [0010]. In particular, applicant notes that the term "volume" in claim 1 is not equivalent to "weight" of Wang et al., as suggested by the Examiner.

Accordingly, because Dietz et al. and Wang et al., alone or in combination, do not teach or suggest each and every limitation of claim 1, and claims 2, 6 and 7 which depend on claim 1, applicant submits that the rejection of claims 1, 2, 6 and 7 based on Dietz et al. and Wang et al. under 35 U.S.C. §103(a) is improper.

Independent claim 13 recites in part: "a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue."

Dietz et al. and Wang et al., alone or in combination, do not teach or suggest: "a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue", as recited in claim 13.

Accordingly, because Dietz et al. and Wang et al., alone or in combination, do not teach or suggest each and every limitation of claim 13, and claims 14, 15, 17 and 18 which depend on claim 13, applicant submits that the rejection of claims 13, 14, 15, 17 and 18 based on Dietz et al. and Wang et al. under 35 U.S.C. §103(a) is improper.

3. The Examiner's rejection of claim 12 is improper because Dietz et al. and Wang et al., alone or in combination, do not teach or suggest each and every limitation of the claim.

Independent claim 12 recites in part: "the potting compound layer having a plurality of conductive particles configured to limit a current flowing through the potting compound layer to less than a predetermined current value to reduce electrostatic discharges in the potting compound layer, the plurality of conductive particles being at least one of silver particles and gold particles."

Dietz et al. does not teach or suggest utilizing silver and gold conductive particles in a *potting compound layer* to limit a current flowing through the compound layer to less than a predetermined current value to reduce electrostatic discharges, as recited in claim 12.

Wang et al. in paragraph [0010] references U.S. Patent No. 4,989,608 which recites a flexible member having resinous material having ferromagnetic particles such that the flexible member can be distinguished from tissue in an image of a body. However, the resinous material is in an *implantable device*, not a gradient coil assembly. Further, Wang et al. discloses that a solid *sheeth 2002* of an *implantable device* can be formed from conductive materials such as silver and gold. See Wang et al., paragraph [0206].

Accordingly, because Dietz et al. and Wang et al., alone or in combination do not teach or suggest each and every limitation of claim 12, applicant submits that the rejection of claim 12 based on Dietz et al. and Wang et al. under 35 U.S.C. §103(a) is improper.

4. The Examiner's rejection of claim 21 is improper because Dietz et al. and Wang et al., alone or in combination, do not teach or suggest each and every limitation of the claim.

Independent claim 21 recites in part: "a volume percentage of the plurality of conductive particles being within a predetermined volume percentage range of the

conductive compound such that a current flowing through the conductive compound to less than 10 microamps to reduce electrostatic discharges in the glue."

Dietz et al. and Wang et al., alone or in combination, do not teach or suggest: "a volume percentage of the plurality of conductive particles being within a predetermined volume percentage range of the conductive compound such that a current flowing through the conductive compound to less than 10 microamps to reduce electrostatic discharges in the glue", as recited in claim 21.

Accordingly, because Dietz et al. and Wang et al., alone or in combination, do not teach or suggest each and every limitation of claim 21, and claims 22 and 24 which depend on claim 21, applicant submits that the rejection of claims 21, 22, and 24 based on Dietz et al. and Wang et al. under 35 U.S.C. §103(a) is improper.

B. THE EXAMINER'S REJECTION OF CLAIM 3 UNDER 35 U.S.C. §103(a) IS IMPROPER

The Examiner's rejection of claim 3 under 35 U.S.C. 103(a) is improper because the Examiner has not identified any proper motivation for the proposed combination of references and the combination of references does not teach or suggest each and every limitation of the claim. Claim 3 stands for falls by itself.

1. The Examiner's rejection of claim 3 is improper under 35 U.S.C. §103(a) because the Examiner has not identified any proper motivation for the proposed combination of Dietz et al., Wang et al., and Doty et al.

Applicant notes that Dietz et al, Wang et al, and Doty et al. do not recognize the problem being solved by the claimed invention. In particular, none of the references recognize that high-voltage potentials induced in a resin between first and second gradient coils can undesirably cause electrostatic discharges in air bubbles within the resin resulting undesirable bursts of electromagnetic radiation. The undesirable bursts of electromagnetic radiation can cause a "snowy" image in an MRI machine. Accordingly, applicant submits

that no proper motivation has been identified for combining Dietz et al., Wang et al., and Doty et al. in an attempt to solve a problem that none of the references recognize.

Because no proper motivation has been identified for the proposed combination of Dietz et al., Wang et al., and Doty, applicant submits that the rejection of claim 3 based on the proposed combination under 35 U.S.C. §103(a) is improper.

2. The Examiner's rejection of claim 3 is improper because Dietz et al., Wang et al., and Doty, alone or in combination, do not teach or suggest each and every limitation of the claims.

Claim 3 depends from claim 1 and therefore incorporates all of the limitations of claim 1 therein. Applicant submits that Dietz et al., Wang et al., and Doty, alone or in combination, do not teach or suggest: "a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue", as recited in claim 1.

Accordingly, because Dietz et al., Wang et al., and Doty, alone or in combination, do not teach or suggest each and every limitation of claim 1, and claim 3 that depends from claim 1, applicant submits that the rejection of claim 3 based on Dietz et al., Wang et al., and Doty, under 35 U.S.C. §103(a) is improper.

C. THE EXAMINER'S REJECTION OF CLAIMS 5 AND 23 UNDER 35 U.S.C. §103(a) IS IMPROPER

The Examiner's rejection of claims 5 and 23 under 35 U.S.C. 103(a) is improper because the Examiner has not identified any proper motivation for the proposed combination of references and the combination of references does not teach or suggest each and every limitation of the claims. Claim 5 stands for falls by itself. Claim 23 stands or falls by itself. However, the arguments in the following section apply to claims 5 and 23.

1. The Examiner's rejection of claims 5 and 23 is improper under 35 U.S.C. §103(a) because the Examiner has not identified any proper motivation for the proposed combination of Dietz et al., Wang et al., and Lehne et al.

Applicant notes that Dietz et al, Wang et al, and Lehne et al., alone or in combination, do not recognize the problem being solved by the claimed invention. In particular, none or the references recognize that high-voltage potentials induced in a resin between first and second gradient coils can undesirably cause electrostatic discharges in air bubbles within the resin resulting undesirable bursts of electromagnetic radiation. The undesirable bursts of electromagnetic radiation can cause a "snowy" image in an MRI machine. Accordingly, applicant submits that no proper motivation has been identified for combining Dietz et al., Wang et al., and Lehne et al. in an attempt to solve a problem that none of the references recognize.

Because no proper motivation has been identified for the proposed combination of Dietz et al. Wang et al., and Lehne et al., applicant submits that the rejection of claims 5 and 23 based on the proposed combination under 35 U.S.C. §103(a) is improper.

2. The Examiner's rejection of claim 5 is improper because Dietz et al., Wang et al., and Lehne et al., alone or in combination, do not teach or suggest each and every limitation of the claim.

Claim 5 depends from claim 1 and therefore incorporates all of the limitations of claim 1 therein. Applicant submits that Dietz et al., Wang et al., and Lehne et al., alone or in combination, do not teach or suggest: "a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue", as recited in claim 1.

Accordingly, because Dietz et al., Wang et al., and Lehne et al., alone or in combination, do not teach or suggest each and every limitation of claim 1, and claim 5 that depends from claim 1, applicant submits that the rejection of claim 5 based on Dietz et al.,

Wang et al., and Lehne et al., under 35 U.S.C. §103(a) is improper.

3. The Examiner's rejection of claim 23 is improper because Dietz et al., Wang et al., and Lehne et al., alone or in combination, do not teach or suggest each and every limitation of the claim.

Claim 23 depends from claim 21 and therefore incorporates all of the limitations of claim 21 therein. Applicant submits that Dietz et al., Wang et al., and Lehne et al., alone or in combination, do not teach or suggest: "a volume percentage of the plurality of conductive particles being within a predetermined volume percentage range of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue."

Accordingly, because Dietz et al., Wang et al., and Lehne et al., alone or in combination, do not teach or suggest each and every limitation of claim 21, and claim 23 that depends from claim 21, applicant submits that the rejection of claim 23 based on Dietz et al., Wang et al., and Lehne et al., under 35 U.S.C. §103(a) is improper.

D. CONCLUSION

In view of the foregoing arguments, applicant respectfully submits that the pending claims are novel and non-obvious. Further, a reversal of the rejections of record, or such recommendation or relief as equity may require, is respectfully requested. Please charge any costs incurred in the filing of this Appeal Brief, along with any other costs, to Deposit Account No. 07-0845.

Respectfully Submitted,

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VIII. CLAIMS APPENDIX

1. A gradient coil assembly for use in an MRI device, comprising:

a gradient tube extending along an axis, the tube including first and second gradient coils and a conductive compound disposed between the first and second gradient coils, the conductive compound being a glue, and a chemical hardening compound disposed in the glue, and a plurality of conductive particles disposed substantially uniformly within the glue, at least a portion of the plurality of conductive particles being in a range of 1-10μm in diameter, a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue.

2. The gradient coil assembly of claim 1 wherein the glue comprises an epoxy resin.

3. The gradient coil assembly of claim 1 wherein the conductive particles comprise carbon particles.

5. The gradient coil assembly of claim 2 wherein the epoxy resin comprises a bisphenol-A resin.

6. The gradient coil assembly of claim 1 wherein the glue comprises a polyester resin.

7. The gradient coil assembly of claim 6 wherein the conductive particles comprise one of carbon particles, silver particles, copper particles, and gold particles.

12. A gradient coil assembly for use in an MRI device, comprising:

a gradient tube extending along an axis, the tube including first and second gradient coils and a potting compound layer disposed between the first and second gradient coils, the potting compound layer having a plurality of conductive particles configured to limit a current flowing through the potting compound layer to less than a predetermined current value to reduce electrostatic discharges in the potting compound layer, the plurality of conductive particles being at least one of silver particles and gold particles.

13. A method for assembling a gradient coil assembly, comprising:

disposing a first gradient coil on a first gradient tube; and

disposing a conductive compound between the first gradient coil and a second gradient coil, the conductive compound being a glue having a plurality of conductive particles therein, at least a portion of the plurality of conductive particles being in a range of 1-10μm in diameter, a volume percentage of the plurality of conductive particles is 0.1% or less of a volume of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue.

14. The method of claim 13 wherein the disposing the conductive compound includes vacuum impregnating the conductive compound between the first and second gradient coils.

15. The method of claim 13 wherein the glue comprises an epoxy resin.

17. The method of claim 15 wherein the conductive particles comprise one of carbon particles, silver particles, and gold particles.

18. The method of claim 13 wherein the glue comprises a polyester resin.

21. A gradient coil assembly for use in an MRI device, comprising:
a gradient tube extending along an axis, the tube including first and second gradient coils and a conductive compound disposed between the first and second gradient coils, the conductive compound being a glue having a plurality of conductive particles dispersed substantially uniformly within the glue, at least a portion of the plurality of conductive particles being in a range of 1-10μm in diameter, a volume percentage of the plurality of conductive particles being within a predetermined volume percentage range of the conductive compound such that a current flowing through the conductive compound is limited to less than 10 microamps to reduce electrostatic discharges in the glue.

22. The gradient coil assembly of claim 21 wherein the glue comprises an epoxy resin.

23. The gradient coil assembly of claim 22 wherein the epoxy resin comprises a bisphenol-A resin.

24. The gradient coil assembly of claim 21 wherein the glue comprises a polyester resin.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

Applicant is not aware of any related proceedings for this patent application.